AN ECONOMIC ANALYSIS OF AGRICULTURAL PRODUCTION FUNCTION IN THE MUDA AGRICULTURAL DEVELOPMENT AREA IN KEDAH, MALAYSIA

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ABSTRACT

Paddy sub-sector is an important agricultural sector and it has become the main contributor of rice for Malaysia. Rice is Malaysian's staple food and the main source of calories. The development of paddy sub-sector manages to guarantee the sustainability of food security for Malaysians. The government has undertaken various measures to ensure the productivity of this sector continues to grow. This is to accommodate the demands of society, as well as to reduce imported rice. This study has selected four paddy production regions under *Muda Agricultural Development Authority* (MADA) as the research locations. This is because MADA is the major rice production in Malaysia. The study is undertaken to investigate factors that influence Malaysia paddy sub-sector, and also to examine the growth of total factor productivity (TFP). In addition, this research also investigates the capital-labour and young-old famers' elasticity of substitution. The study employed time series data from the main seasons of 1996 (1996H1) to 2011 (2011H1). Autoregressive distributed lag (ARDL) approach was employed to determine the long-run relationship between responding variable and regressor. For a model that does not indicate any long-run relationship, the researcher may employ the vector autoregression (VAR) approach. The total factor productivity (TFP) is employed to investigate paddy productivity growth. Present research employs constant elasticity of substitution (CES) production function to determine capital-labour and young-old farmers' elasticity of substitution. Empirical result indicates that each MADA production region has different factors that influence the paddy production. For both main and off seasons the TFP growth is fluctuating below 5 per cent. Empirical estimation also indicates that an average production in off-season has a negative productivity growth (declining productivity levels). The elasticity of substitution between the capital and labour is found inelastic. Meanwhile, the elasticity of substitutions of the young and old farmers is said unitary. From the above findings, this research strongly suggests that the increase in productivity growth is important for paddy sub-sector in Malaysia. The study makes several practical inferences in designing suitable macroeconomic policy and undertaking measures to promote high productivity growth. A few policies are recommended such as to increase research and development (R&D) fund allocation, improve the efficiency of land management and encourage more young people to join paddy sub-sector.

Keywords: ARDL, CES, elasticity of substitution, MADA, total factor productivity (TFP).

ABSTRAK

Subsektor padi merupakan sektor pertanian yang penting dan ia menjadi penyumbang utama beras untuk Malaysia. Beras juga menjadi makanan ruji dan sumber utama kalori. Pembangunan sektor ini dapat menjamin kelangsungan keselamatan makanan untuk rakyat Malaysia. Kerajaan telah mengambil pelbagai langkah untuk memastikan produktiviti sektor ini terus berkembang. Ini adalah untuk menampung permintaan masyarakat dan mengurangkan import beras dari negara-negara asing. Bagi tujuan kajian ini, empat kawasan pengeluaran padi di bawah Lembaga Kemajuan Pertanian Muda (MADA) dipilih sebagai lokasi kajian. Ini kerana MADA merupakan kawasan pengeluar beras utama di Malaysia. Kajian ini menggunakan data siri masa dari musim pengeluaran utama tahun 1996 (1996H1) hingga musim pengeluaran utama 2011 (2011H1). Kajian ini telah dibangunkan untuk menyiasat faktor-faktor yang mempengaruhi sektor padi Malaysia. Tambahan pula, kajian ini juga mengkaji pertumbuhan produktiviti faktor keseluruhan (TFP). Di samping itu, kajian ini juga mengkaji keanjalan penggantian modal-buruh dan petani muda-petani berusia. Kaedah autoregrasi taburan lat (ARDL) telah digunakan untuk menentukan hubungan jangka panjang antara pemboleh ubah bebas dan pemboleh ubah bersandar. Jika tidak wujud hubungan jangka panjang, pendekatan vektor autoregrasi (VAR) digunakan. Kaedah produktiviti faktor keseluruhan (TFP) digunakan bagi menyiasat pertumbuhan produktiviti padi. Penyelidikan ini juga telah menggunakan fungsi pengeluaran keanjalan pengantian tetap (CES) untuk menentukan keanjalan penggantian bagi modal-buruh dan petani muda-petani berusia. Dapatan empirik menunjukkan setiap kawasan pengeluaran MADA mempunyai faktor-faktor pengeluaran yang berbeza. Bagi kedua-dua musim didapati kadar pertumbuhan TFP turun naik di bawah aras 5 peratus. Kajian empirik juga mendapati purata pengeluaran bagi luar musim mencatatkan pertumbuhan produktiviti yang negatif (penurunan tahap produktiviti). Keanjalan penggantian antara modal dan buruh adalah tidak anjal. Manakala keanjalan penggantian petani muda dan petani berusia adalah uniti. Daripada dapatan di atas, kajian ini mencadangkan bahawa peningkatan dalam pertumbuhan produktiviti adalah penting dalam subsektor padi. Kajian ini membuat beberapa kesimpulan praktikal untuk mereka bentuk langkah dasar dan aku janji ekonomi makro sesuai untuk menggalakkan pertumbuhan produktiviti yang tinggi. Beberapa dasar telah dicadangkan seperti meningkat alokasi dana penyelidikan dan pembangunan (R&D), meningkatkan kecekapan pengurusan tanah dan menggalakkan lebih ramai orang muda untuk menyertai subsektor penanaman padi.

Katakunci: ARDL, CES, keanjalan penggantian, MADA, produktiviti faktor keseluruhan (TFP).

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ARDL	Autoregressive Distributed Lag Model
AIC	Akaike Information Criterion
CD	Cobb Douglas Production Function
CES	Constant Elasticity of Substitution Production Function
DEA	Data Envelopment Analysis
DGP	Data Generating Process
ECM	Error Correction Model
IADP	Integrated Agricultural Development Projectsiat
KPSS	Kwiatkowski, Phillips, Schmidt, and Shin Unit Root Test
MADA	Muda Agricultural Development Authority
NKEA	Agricultural National Key Economics Areas
OLS	Ordinary least squares
PP	Phillips-Peron Unit Root Test
SBC	Schwarz Bayesian Criterion
SSL	Self Sufficiency Level
VES	Variable Elasticity of Substitution

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CHAPTER 1

INTRODUCTION

1.0 Research Background

Oryza Sativa is the scientific name for paddy. This crop is closely associated to South, Southeast, and East Asia. These three locations produced 90 per cent of the world's rice production for every year (Nur Badriyah, Jamal, Zakirah & Kamal, 2013). Asian countries like China, India, Indonesia, Bangladesh, Vietnam, and Thailand are among the largest world rice producers. The emergence of these countries is closely associated to the early history of the world's rice cultivation. From the archaeological discoveries, the world rice cultivation was started in Asian region around 10,000 B.C. Countries such as Thailand and China are believed to be the first countries that have planted paddy in the world. In Thailand, it is believed that paddy was grown since 10,000 B.C. in Non Nok Tha, the Korat area of Thailand. Meanwhile, in China, archaeologists have discovered that paddy was planted, dating back at least 10,000 to 8,000 B.C., in some areas such as Chekinag Province and Yangtse Valley (International Rice Research Institute [IRRI], 2011). Since then, paddy farming has spread throughout the Asian region and became the main food crop for Asia population. The significance of rice as the main food crop and a major source of a calorie remain until today. This was verified by Timmer (2010) in his literature highlights. According to him, the Asian population consumes 30 to 80 per cent of rice to fulfil their daily calorie intake.

Parallel to many other Asian countries, Malaysia was also influenced by paddy farming development from its neighbouring countries such as Thailand and Indonesia. As

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REFRENCESS

Abdullah, A. M. (2007). *Malaysian Paddy and Rice Industry: Policy Implementation and Directions*. In Fatimah, M. A., Nik Mustapha, R. A., Abdullah, A. M., & Bisant Kaur, (Eds), 50 years of Malaysian Agriculture: Transformational Issues, Challenges and Direction, UPM Press, Serdang, pp. 281-308.

Abdullah, N. (2000). The Effects of Price-support Programme on Farm Tenancy Patterns and Farm Profitability: Some Evidence from Malaysia. *The Pakistan Development Review*, 39(1), 51-72.

Abdullah, N. (2002). Measurement Of Technological Change Biases And Factor Substitutions For Malaysian Rice Farming. *International Journal of Economics, Management and Accounting,* 10(1), 1-20.

Abeysekara, W. T. (1976). *A production function analysis of paddy farming in Sri Lanka* (Unpublish Doctoral dissertation). University of British Columbia. Canada.

Adamu, T., Adama, M., & Adama, M. (2015). The Analysis Of The Technical Efficiency Of Rain- Fed Rice Farmers In Taraba State. *Journal of Agriculture,* 2(4), 1–11.

Africare, O. A. WWF–ICRISAT Project (2010)'More Rice for People. *More Water for the Planet', WWF–ICRISAT Project, Hyderabad, India.*

Ahmad, T. T. M. A., & Suntharalingam, C. (2009). Transformation and Economic Growth of the Malaysian Agricultural Sector. *Economic and Technology Management Review*, 4, 1-10.

Akino, M., & Hayami, Y. (1974). Sources of agricultural growth in Japan, 1880–1965. *The Quarterly Journal of Economics,* 88(3), 454-479.

Alam, M. M., Siwar, C., Murad, M. W., Molla,R. I., & Mohd Ekhwan. (2010). Socioeconomic profile of farmer in Malaysia: study on integrated agricultural development area in North-West Selangor. *Agricultural Economics and Rural Development,* 7(2), 249-226.

Alam, M. M., Siwar, C., Wahid, M. M., & Mohd Ekhwan. (2011). Farm Level Assassment of Climate Change, Agriculture and Food Security Issues in Malaysia. *World Applied Sciences Journal, 14*(3), 432-442.

Alavi, H. R. (2011). *Trusting Trade and the Private Sector for Food Security in Southeast Asia*. World Bank Publications.

Amanda, C. (1997, April 27). Avoiding the ATM: Studies show training can reduce technophobia among older adults. Retrieved from http :// gtresearchnews.gatech. edu/ newsrelease/AUTOTEL.

Amanjit, K. (1991). Semenanjung Tanah Melayu Pada Abad ke 19: Satu Tinjauan Ekonomi. *Dewan Masyarakat*, 1-17.

Amaza, P. S., & Maurice, D. C. (2005). Identification of factors that influence technical efficiency in rice-based production systems in Nigeria. Rice Policy and Food Security in sub-Saharan Africa, (pp. 70 - 81).

Amir, H. (1975). *An Economic Analysis of The Agricultural Development Potential For Southern Honduras* (Unpublished PhD thesis). University of Missouri-Columbia. USA.

Angelidis, D., & Lyroudi, K. (2006). Efficiency in the Italian banking industry: data envelopment analysis and neural networks. *International Research Journal of Finance and Economics,* 5(1), 155-165.

Antle, J. M. (1983). Testing the stochastic structure of production: a flexible moment-based approach. *Journal of Business & Economic Statistics,* 1(3), 192-201.

Arrow, K. J., Chenery, H. B., Minhas, B. S., & Solow, R. M. (1961). Capital-labor substitution and economic efficiency. *The Review of Economics and Statistics,* 43(3), 225-250.

Asafu-Adjaye, J. (2000). The relationship between energy consumption, energy prices and economic growth: time series evidence from Asian developing countries. *Energy economics,* 22(6), 615-625.

Asteriou, D.1., & Hall, S.G. (2007). *Applied Econometrics: A Modern approach.* (Revised Edition). New York: Palgrave Macmillan.

Aziz A.M., Ibrahim, A. L., Norizan M. N., & Hassan N. K. (2003). Pertanian Mapan: Cabaran dan Strategi Pembangunan Dalam Sektor Pertanian Di Negeri Perlis. National Conference on Society, Space and Environment in a Globalised World: Prospects & Challenges, Penang, Malaysia. (pp. 277 - 285)

Azlina, H., & Rokiah, A. (2011). Non-tariff barriers in Malaysia's agricultural sector, *Business Management Quarterly Review*, 2 (4), 46-55.

Azmariana, A., Jeffrey, L., Bahaman A. S., Norsida M. & Hayrol, A. M. S. (2013). Relationship between Attitude, Knowledge, and Support towards the Acceptance of Sustainable Agriculture among Contract Farmers in Malaysia, *Asian Social Science,* 9 (2), 99 – 105.

Badriyah, S. & Tan, L. E. (2006). *Sejarah ekonomi Kedah sehingga kurun ke-19*. Majlis Polemik Sejarah Malaysia. Arkib Negara Malaysia, Alor Setar, Kedah.

Baharumshah, A.Z. (1989). A Model for the Rice and Wheat Economy in Malaysia: An

Empirical Assessment of Alternative Specifications. *Pertanika,* 14(3), 383-391.

Bahiah, N., Haris, M., Hamzah, A., Krauss, S. E., & Ismail, I. A. (2013). Relationship between Decision-Making Inputs and Productivity among Paddy Farmers in Integrated Agriculture Development Areas (IADAs), in Malaysia. International Journal on Advanced Science Engineering Information Technology, 3(1), 64–70.

Baikuntha, A., & Jeetendra, P. A. (2006). Estimation of Paddy Production Function in Nepal Using Panel Data. Retrieved from http://academic.research.microsoft.com/ Paper/6457324. aspx.

Balde, B. S., Kobayashi, H., Nohmi, M., Ishida, A., & Esham, M. (2014). An Analysis of Technical Efficiency of Mangrove Rice Production in the Guinean Coastal Area, 6(8), 179–196.

Barnes, S., Price, S., & Barriel, M. S. (2008). *The elasticity of substitution: evidence from a UK firm-level data set* (No. 348). Bank of England.

Basavaraja, H., Mahajanashetti, S., & Sivanagaraju, P. (2008). Technological change in paddy production. A comparative Analysis of traditional and SRI method of cultivation. *Indian journal of Agricultural Economics,* 63(4), 629-640.

Battese, G. E., & Coelli, T. J. (1992). Frontier production functions, technical efficiency and panel data: with application to paddy farmers in India. *Journal of productivity analysis,* 3(1-2), 153-169.

Benu, F. L. (1996). *Analisis Struktur Produksi, Konsumsi dan Perdagangan Beras di Propinsi Nusa Tenggara Timur. (Unpublished Master's thesis), Bogor Institute of Agriculture, Indonesia.*

Bhanoji, V., & Ramana, K. (1970). Elasticity of capital-labour substitution in West Malaysian manufacturing: Estimates and appraisal. *Malayan Economic Review,* 21, 91-103.

Bhattacharjee, J. P. (1955). Resource use and productivity in world agriculture. *Journal of Farm Economics,* 37(1), 57-71.

Bhujel, R. B., & Ghimire, S.P. (2006). Estimation of Production Function of Hiunde (Boro) Rice. *Nepal Agric. Res. Journal,* 7, 88-97.

Blaug, M. (1985). *Economic Theory in Retrospect* (4th eds.). Cambridge University Press.

Bloomberg. (2011). Malaysia Targets 450 Day Rice Stock Pile, Food Security (Businessweek eds.). Reactived from www.bloomberg.com.

Brown, R.L., J. Durbin & Evans, J.M. (1975). Techniques for testing the constancy of regression relations over time. *Journal of the Royal Statistical Society B,* 37, 149-163.

Buarque, C., Mohorčič Špolar, V. A., & Zhang, T. (2006). Introduction: Education and poverty reduction. *International Review of Education,* 52(3), 219-229.

Byerlee, D., De Janvry, A., & Sadoulet, E. (2009). Agriculture for development: Toward a new paradigm. *Annual Review of Resource Economics,* 1(1), 15–31. http://doi.org/10.1146.

Card, D., & Lemieux, T. (2001). Can falling supply explain the rising return to college for younger men? A cohort-based analysis. *The Quarterly Journal of Economics,* 116(2), 705-746.

Carrasco-Tauber, C., & Moffitt, L. J. (1992). Damage control econometrics: functional specification and pesticide productivity. *American Journal of Agricultural*

Economics, 74(1), 158-162.

Cavanagh, C. L., Elliott, G., & Stock, J. H. (1994). Inference in models with nearly integrated regressors. *Econometric Theory,* 11, 1131-1147.

Cervantes-Godoy, D., & Dewbre, J. (2010). *Economic importance of agriculture for poverty reduction.* OECD Publishing. Retrieved from http://www.oecd.org/dataoecd/49/19/46341298.pdf

Chand, R., Prasanna, P. L., & Singh, A. (2011). Farm size and productivity: Understanding the strengths of smallholders and improving their livelihoods. *Economic and Political Weekly,* 46(26), 5-11.

Chang, Y., & Park, J. Y. (2002). On the asymptotics of ADF tests for unit roots. *Econometric Reviews*, 21(4), 431-447.

Changkid, N. (2013). The Factors Production Use Efficiency in the Integrated Farming in Suratthani Province, Southern Thailand. *Procedia-Social and Behavioral Sciences,* 91, 376-384. http://doi.org/10.1016/j.sbspro.2013.08.434

Charnes, A., Cooper, W. W., & Rhodes, E. (1978). Measuring the efficiency of decision making units. *European journal of operational research,* 2(6), 429-444.

Charnes, A., Cooper, W.W., & Banker, R.D. (1984). Some Models for Estimating Technical and scale Inefficiencies in Data Envelopment Analysis, *Management Science*, 30, 1078 – 1092.

Chaudhary, M. A., Khan, M. A., Naqvi, K. H., & Ahmad, M. (1998). Estimates of Farm Output Supply and Input Demand Elasticities: The Translog Profit Function Approach. *The Pakistan Development Review*, 37(4). 1031-1050.

Chaudhry, I. M., Khan, M. B., & Anwar, M. (2009). Factors affecting cotton production in Pakistan: Empirical evidence from Multan district. *Journal of Quality and Technology Management*, 5(11), 91-100

Chen, M.Y. (2002). Testing stationarity against unit roots and structural changes. *Applied Economics Letters,* 9(7), 459-464.

Chen, Z., Juneau, P., & Qiu, B. (2007). Effects of three pesticides on the growth, photosynthesis and photoinhibition of the edible cyanobacterium Ge-Xian-Mi (< i> Nostoc</i>). *Aquatic toxicology,* 81(3), 256-265.

Cheung, Y.W., Lai, K.S., & Tran, T. (1994). Finite-sample critical values of the kpss test: A response surface approach. *Journal of International Money and Finance,* 17, 597-614.

Chirinko, R. S., & Mallick, D. (2011). The elasticity of derived demand, factor substitution, and product demand: Corrections to Hicks' formula and Marshall's Four Rules. *Labour Economics*, 18(5), 708-711.

Chirinko, R., Fazzari, S., & Meyer, A. (2004). That elusive elasticity: a long-panel approach to estimating the capital-labor substitution elasticity. CESifo working papers, No. 1240. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=573246.

Chirwa, E. W., & Mwafongo, W. M. (1998). Stochastic Production Functions and Technical Efficiency of Famers in Southern Malawi, Working paper no. WC/04/98. Retrieved from *www.geocities.ws/echirwa/agritewm.pdf*

Christensen, L. R., Jorgenson, D. W., & Lau, L. J. (1973). Transcendental logarithmic production frontiers. *The Review of Economics and Statistics,* 55(1), 28-45.

Chukwuji, C.O., Inoni, O. E., & Oyaide, W. J. (2006). A Quantitative Determination of Allocative Efficiency in Broiler Production in Delta State, Nigeria. *Agriculturae Conspectus Scientificus (ACS),* 71(1), 21-26.

Clark, K. B., & Freeman, R. B. (1979). *How elastic is the demand for labor?*. National Bureau of Economic Research Working Paper Series, 62(4), 509–520. http://doi.org/10.2307/1924775

Cobb, C. W., & Douglas, P. H. (1928). A theory of production. *The American Economic Review,* 18(1), 139-165.

Conradie, B., Piesse, J., & Thirtle, C. (2009). What is the appropriate level of aggregation for productivity indices? Comparing district, regional and national measures. *Agrekon,* 48(1), 9-20.

Crego, A., Larson, D. F., Butzer, R., & Mundlak, Y. (1998). A new database on investment and capital for agriculture and manufacturing. Washington, DC: World Bank., 1–62. Retrieved from http://documents.worldbank.org/curated/en/1998/11/438637/new-database-investment-capital-agriculture-manufacturing.

Daño, E. C., & Samonte, E. D. (2005). *Public sector intervention in the rice industry in Malaysia.* Southheast Asia Region Initiatives For Community Empowermnet (SEARICE). Retrieved from http://www.zef.de/module/register/media/2692_6MALAYSIA. Pdf

Darham, S., Noh, M., Farhana, A., & Idris, N. (2009). Acreage response of rice: A case study in Malaysia. MPRA Paper No. 15300. Retrieved from http://mpra.ub.uni-muenchen.de/15300/

Denison, E. F. (1967). *Why growth rates differ: postwar experience in nine western countries*. Washington, DC: Brookings Institution.

Deolalikar, A. B., & Vijverberg, W. P. (1987). A test of heterogeneity of family and hired labour in Asian agriculture. *Oxford Bulletin of Economics and Statistics,* 49(3), 291-305.

Department of Agriculture [DOA]. (2008). *Paddy Production survey Report Malaysia: Main Season 2007/2008*. Kuala Lumpur, Pencetakan Nasional.

Department of Agriculture [DOA]. (2011). Pembangunan Industri Padi. Retrieved from www.doa.gov .my/c/document./get_file.

Department of Agriculture [DOA]. (2014). *Paddy Statistics of Malaysia 2013*. Kuala Lumpur, Pencetakan Nasional.

Department of Statistic [DOS]. (2010). *Time Series Data*. Retrieved from: http://www.statistics.gov.my

Department of Statistics [DOS]. (2010). Year book of statistics, 2010, Malaysia.

Devendra, P. Y., & Abdul Aziz, A. R. (1994). Credit, technology, and paddy farm production: a case study of Tanjong Karang and Beranang, Malaysia. *The Developing Economies,* 32(1), 66-82.

Dhehibi, B., & Lachaal, L. (2006). Empirical evidence of productivity growth in Tunisian agriculture: 1961–2000. *African development review,* 18(2), 248-257.

Dlova, M. R., Fraser, G., & Belete, A. (2004). Factors affecting the success of farmers in the Hertzog Agricultural Cooperative in the central Eastern Cape. *Fort Hare Papers,* 13, 21-33.

Dung, N. H., & Dung, T. T. T. (1999). *Economic and health consequences of pesticide use in paddy production in the Mekong Delta, Vietnam*. Economy and environment program for Southeast Asia (EEPSEA).

Retrieved from http://www.eepsea.net/pub/rr/10536137480ACF124.pdf.

Fahmi, Z., Samah, B. A., & Abdullah, H. (2013). Paddy Industry and Paddy Farmers Well-being: A Success Recipe for Agriculture Industry in Malaysia. Asian Social Science, 9(3), p177.

Echevarria, C. (1998). A three-factor agricultural production function: the case of Canada. *International Economic Journal,* 12(3), 63-75.

Economic Planning Unit [EPU]. (2006). *Ninth Malaysia Plan (2006-2010).* Malaysia, Prime Minister's Department.

Economic Planning Unit [EPU]. (2001). *Eighth Malaysia Plan 2001-2005*. Malaysia, Prime Minister's Department.

Economic Planning Unit [EPU]. (2010). *Tenth Malaysia Plan 2011-2015*. Malaysia, Prime Minister's Department.

Economic Planning Unit [EPU]. (2015). *Production Indicators*, Prime Minister's Department. Reactived from www.epu.gov.my/documents/10124/920d0ac9-93ce-4171-908f-5078339add78.

Economic Transformation Programme (ETP). (2011) *A Roadmap For Malaysia*, Reactived from http://etp.pemandu.gov.my/Download_Centre-@-Download_ Centre.aspx, accessed 20 October 2011

Emrouznejad, A., & Thanassoulis, E. (2001). An extensive bibliography of data envelopment analysis (DEA). Volume I–V Coventry: University of Warwick,

Retrieved from http://www. warwick. ac. uk/~ bsrlut.

Enders, W. (2008). *Applied econometric time series*: John Wiley & Sons.

Engle, R. F., & Granger, C. W. J. (1987). Co-integration and error correction: representation, estimation, and testing. *Econometrica: Journal of the Econometric Society*, 251-276. http://doi.org/http://dx.doi.org/10.2307/1913236.

Evenson, R. E., & Douglas G. (2003). Assessing the Impact of the Green Revolution, 1960 to 2000, *Science, 300 (2)*: 758-762.

Evenson, R. E., & Kislev, Y. (1975). *Agricultural research and productivity*: Yale University Press.

Faber, M., Proops, J. L., & Baumgärtner, S. (1998). All production is joint production-a thermodynamic analysis. *Sustainability and Firms, Technological Change and the Regulatory Environment, Edward Elgar, Cheltenham.*

Fahmi, Z., Samah, B. A., & Abdullah, H. (2013). Paddy Industry and Paddy Farmers Well-being: A Success Recipe for Agriculture Industry in Malaysia. *Asian Social Science*, 9(3), 177-181. http://doi.org/10.5539/ass.v9n3p177.

Falcon, W. P. (1970). The green revolution: generations of problems. *American Journal of Agricultural Economics,* 52(5), 698-710.

FAO. (2013). *Rice Market Monitor*, Trade and Markets Division, *Volume XVI - Issue No. 3*

Farajova, K. (2011). Budget deficit and macroeconomics fundamentals: The case of Azerbaijan. *International Journal of Economic Sciences and Applied Research* (2), 143-158.

Faridah T., Z. A., & Sulaiman Z. (1995). *Pemasaran Hasil Pertanian.* Kuala Lumpur: UM Press.

Farrell, J. M. (1957). The measurement of productive efficiency. *Journal of the Royal Statistical Society. Series A (General),* 120(3), 253-290. http://doi.org/10.1016/S0377-2217(01)00022-4.

Faruq, G., Taha, R., & Prodhan, Z. (2014). Rice Ratoon Crop: A Sustainable Rice Production System for Tropical Hill Agriculture. Sustainability, 6(9), 5785–5800.

Fatimah, M. A., & Amna, A. (2009). Global Food Prices: Implication for Food Security in Malaysia. *Journal of the Consumer Research and Resource Centre*, 21-38.

Fatimah, M. A., Jani, M. F., & Yusop, M. K. (2002). Agenda Polisi Sekuriti Makanan Malaysia. Selected Indicators of Food and Agriculture Development in Asia-Pacific Region 1992-2002. Retrieved from http://www. econ. upm.edu. my /~fatimah/Fatimah%20 sekuriti%20 makanan%20MPN%20101101.pdf.

Fatimah,M.A., Nik Mustapha, R.A., Bisant, K & Amin, M.A. (2007). *50 years of Malaysian Agriculture Transformational Issues Challenges & Direction,1st ed.* Universiti Putra Malaysia Press.

Felipe, J. (2007). *Total Factor Productivity Growth in East Asia: A Critical Survey*, Economic and Development Resource Center, Report Series No. 65, Asian Development Bank.

Feyrer, J. (2002). *Demographics and productivity*. Mimeo, Dartmouth College.

Foley, D. K. (1999). Notes on the theoretical foundations of political economy. Retrieved from http://www.barrybeck.com/forms/foley2.pdf

Food and Agriculture Organization [FAO]. (2002). Selected Indicators of Food and Agriculture Development in Asia-Pacific Region 1992-2002, Food and Agriculture Organization of The United Nations, Regional Office for Asia and the Pacific,

Bangkok.

Fosu, O. A., & Magnus, F. J. (2006). Bounds testing approach to cointegration: An examination of foreign direct investment trade and growth relationships. *American Journal of Applied Sciences,* 3(11), 2079.

Fraser, I. (2002. March 7). The Cobb-Douglas Production Function: An Antipodean Defence?, 39–58. Retrieved from http://kar.kent.ac.uk/5507/

Fujimoto, A. (1976). An economic analysis of peasant rice farming in Kelantan, Malaysia. *South East Asian Studies,* 14(2), 159-176.

Fulginiti, L. E. & Perrin, R.K. (1993). Prices and productivity in agriculture. *The Review of Economics and Statistics*, 75(3), 471–482. http://doi.org/10.2307/2109461.

Fulginiti, L. E., & Perrin, R. K. (1998). Agricultural productivity in developing countries. *Agricultural Economics,* 19(1), 45-51. http://doi.org/10.1016/S0169-5150(98)00045-0.

Gerdin, A. (2002). Productivity and economic growth in Kenyan agriculture, 1964–1996. *Agricultural Economics,* 27(1), 7-13. http://doi.org/10.1016/S0169-5150(01)00062-7.

Grimes, A., Ren, C., & Stevens, P. (2012). The need for speed: Impacts of internet connectivity on firm productivity. Journal of Productivity Analysis, 37(2), 187–201. doi:10.1007/s11123-011-0237-z

Gomes, A. (2007). *Modernity and Malaysia: settling the Menraq forest nomads* (3). Routledge.

Goni, M., Mohammed, S., & Baba, B. (2007). Analysis of resource-use efficiency in rice production in the Lake Chad Area of Borno State, Nigeria. *Journal of Sustainable*

Development in Agriculture & Environment, 3, 31-37.

Greene, W. H. (2003). *Econometric Analysis, 5 eds.* Pearson Education India.

Gujarati, D. N. (1995). *Basic econometrics, 3 eds*. New York: McGraw-Hill.

Habibullah, M. S. (1988). Real Money Balances in the Production Function of a Developing Economy: A Preliminary Study of the Malaysian Agricultural Sector. *Pertanika. 11(3)*, 451-460.

Hamermesh, D. (1993). *Labor Demand.* Princeton University Press, Princeton.

Hamermesh, D. S. (2001). Older workers in the coming labor "shortage:" implications of labor demand. *Roundtable on the Demand for Older Workers, The Brookings Institution, March.*

Harris, R. I. (1995). *Using cointegration analysis in econometric modelling* (82): Prentice Hall London.

Harriss, J. (2007). Bringing politics back into poverty analysis: Why understanding social relations matters more for policy on chronic poverty than measurement. *Chronic Poverty Research Centre Working Paper* (77).

Hasan, R. (2002). The impact of imported and domestic technologies on the productivity of firms: panel data evidence from Indian manufacturing firms. *Journal of Development Economics,* 69(1), 23-49.

Hassim, M. D., Am-On, A., Sontichai, C., Nongnooch, P. & Chariensak, R., (2013). Assessing Malaysian Farmers' Capability, Acceptability and Practicality toward a Rice Good Agricultural Practices Model, Kasetsart J. (Soc. Sci) 34 : 562 – 572.

Hayami, Y. (1969). Industrialization and agricultural productivity: an international comparative study. *The Developing Economies,* 7(1), 3-21.

Hayami, Y., & Ruttan, V. W. (1970). Agricultural productivity differences among countries. *The American Economic Review,* 60(5), 895-911.

Hayami, Y., & Ruttan, V. W. (1971). *Agricultural development: an international perspective*: Baltimore, Md/London: The Johns Hopkins Press.

Heady, E. O. (1950). Application of Recent Economic Theory in Agricultural Production Economics. *Journal of Farm Economics, 32(4 Part 2)*, 1125-1139.

Heady, E.O., & Dillon, J. L. (1961). *Agricultural production functions*. Iowa State Univ. Press Ames.

Henningsen, A., & Henningsen, G. (2011). *Econometric Estimation of the" Constant Elasticity of Substitution" Function in R: Package micEconCES*. Institute of Food and Resource Economics, University of Copenhagen.

Hildebrand, G. H & Liu, T. (1965). *Manufacturing production functions in the United States, 1957: An interindustry and interstate comparison of productivity*. Cornell University, Ithaca, New York.

Holcombe, R. G. (1998). Entrepreneurship and economic growth. *Quarterly Journal of Austrian Economics, 1(2)*, 45-62.

Hu, F., & Antle, J. M. (1993). Agricultural policy and productivity: International evidence. *Review of Agricultural Economics,* 15(3), 495-505. http://doi.org/10.2307/1349484.

Huang, Y. (1974). The behaviour of indigenous and non-indigenous farmers: A case study. *The Journal of Development Studies,* 10(2), 175-187.

Huq, A. S. M. A., & Arshad, F. M. (2010). Supply response of potato in Bangladesh: A vector error correction approach. Journal of Applied Sciences, 10(11), 895-902.

Ibrahim, M. H. (2004). A VAR analysis of US and Japanese effects on Malaysian aggregate and sectoral output. *International Journal of Applied Econometrics and Quantitative Studies,* 1(1), 5-28.

Ibrahim, N. (2010). *Rural Development In Malaysia.* Centre for Innovative Planning and Development Faculty of Built Environment Universiti Teknologi Malaysia, Monograph 4.

Idiong, I. C., Onyenweaku, C. E., Ohen, B., & Agom, I. (2007). A stochastic frontier analysis of technical efficiency in swamp and upland rice production systems in Cross-River State, Nigeria. *Agricultural Journal,* 2(2), 299-305.

Idris, J. &. Rahmah, I. (2006). Elasticity of Substitutions between Foreign and Local Workers in the Malaysian Manufacturing Sector. *Pertanika Journal of Social Sciences & Humanities,* 14(1), 63-76.

Idris, J. &. Rahmah, I. (2010). Impact of labour quality on labour productivity and economic growth. *African Journal of Business Management,* 4(4), 486-495.

Idris, J. (2007). Determinants of total factor productivity growth in Malaysia. *Journal of economic Cooperation,* 28(3), 41-58.

Idris, N., Shamsudin, M. N., Arshad, F. M., & Farha, E. (2012). A Model for Paddy Industry in Malaysia. In P*roceedings of USM-AUT International Conference 2012 Sustainable Economic Development: Policies and Strategies*. 167, 9). Penang , Malaysia.

Inao, K., Ishii, Y., Kobara, Y., & Kitamura, Y. (2001). Prediction of pesticide behavior in paddy field by water balance on the water management using pesticide paddy field model (PADDY). *Nippon Noyaku Gakkaishi,* 26(3), 229-235.

Indrani, I. (2001). Agriculture and Food Security; Development in Malaysi. In M. Education and Research Association for Consumers (Eds.), *Situation Agricultural in Malaysia-A Cause For Concern, Education and Researc Assocation For Consumer, Malaysia*. Selangor, Malaysia. ERA Consumer.

Ingabire, C., & Bizoza R, A. (2013). Determinants and Profitability of Rice production in Cyabayaga Watershed, Eastern Province, Rwanda. *Rwanda Journal Series H: Economics and Management*, 1(1), 63-75.

Inoni O.E. (2007). Allocative efficiency in pond fish production in Delta State, Nigeria: A production function approach. *Agricultura tropica et subtropica,* 40(4), 127-134.

International Commission on Irrigation and Drainage [ICID]. 2010, Malaysia, Retrieved from http://www.icid.org/v_malaysia.pdf.

International Rice Research Institute [IRRI]. (2011). Rice Knowledge Bank. Retrieved from http://www.knowledgebank.irri.org. Rice Knowledge Bank.

Ismail, A. H. (1972). Production functions for samples of rice farms in West Malaysia. *Akademika,* 1, 1-14.

Ismail, R. (1999). Pembangunan Sumber Manusia Dalam Industri Pembuatan Skel Kecil dan Sederhana. *Akademika,* 57(1). 41-66.

Ismail, R., & Jajri, I. (2002). Input Elasticity of Substitution in the Malaysian Manufacturing Sector. *Malaysian journal of economic studies, 39(1/2)*, 33.

Jabil, M., Noriah, Y., & Ahmad, T. M. J. (2010). Transformasi Pembangunan Ekonomi Di Negeri Kedah: Perepektif Historikal, Prosiding Persidangan Kebangsaan Ekonomi Malaysia V (2), 171 – 181.

Jayaraman, T. (1983). *Determinants of Paddy Production in Indonesia, 1972-1981: A*

Simultaneous Equation Model Approach: Asian Development Bank.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of economic dynamics and control,* 12(2), 231-254.

Johansen, S., & Juselius, K. (1990). Maximum likelihood estimation and inference on cointegration—with applications to the demand for money. *Oxford Bulletin of Economics and Statistics,* 52(2), 169-210.

Jorgenson, D. W., Gollop, F. M., & Fraumeni, B. M. (1987). *Productivity and US economic growth*: North-Holland Amsterdam.

Kamaruddin, R., Ali, J., & Saad, N. M. (2013). Happiness and its influencing factors among paddy farmers in Granary Area of Mada. *World Applied Sciences Journal, 28(EFMO))*, 91-99.

Karagiannis, G., Palivos, T., & Papageorgiou, C. (2005). Variable elasticity of substitution and economic growth: theory and evidence *New trends in macroeconomics.* 21-37.

Katz, J. M. (1969). *Production Functions, Foreign Investment and Growth: A Study Based on the Argentine Manufacturing Sector 1946-1961*: North-Holland Publishing Company.

Kawagoe, T., Hayami, Y., & Ruttan, V. W. (1985). The intercountry agricultural production function and productivity differences among countries. *Journal of Development Economics,* 19(1), 113-132.

Kawaguchi, K., & Kyuma, K. (1974). Paddy Soils in Tropical Asia: Part 1. Description of Fertility Characteristics. *Southeast Asian Studies,* 12(1), 3-24.

Khali, l. A., & Anthony, C.T. H. (2012). Determinants of Agriculture Productivity Growth in Pakistan. *International Research Journal of Finance and Economics (95)*, 165 -

172.

Khan, S., Tariq, R., Yuanlai, C., & Blackwell, J. (2006). Can irrigation be sustainable?. Agricultural Water Management, 80(1), 87-99.

Khidzir, A. B. M., Malek, M. A., Ismail, A. R., Juneng, L., & Chun, T. S. (2015). Utilization of Artifical Immune System in Prediction of Paddy Production, 10(3), 1462–1467.

Khusro, A. M. (1964). Returns to scale in Indian agriculture. *Indian journal of Agricultural Economics,* 19(3), 51-80.

Kirsten, J., & Vink, N. (2003). *Policy Module South Africa.* . Paper presented at the The Roles of Agriculture Project International Conference Rome, Italy.

Kochanski, G. (2005). Confidence Intervals and Hypothesis Testing. Retrieved from http://kochanski.org/gpk/teaching/0401Oxford.

Kohansal, M. R., Torabi, S., & Dogani, A. (2013). Agricultural impact on economic growth in Iran using ARDL approach co integration. *International Journal of Agriculture and Crop Sciences*, 6(17), 1223

Kouakou, A. K. (2011). Economic growth and electricity consumption in Cote d'Ivoire: Evidence from time series analysis. *Energy Policy.* 39(6), 3638-3644.

Kremer, M., & Maskin, E. (1996). Wage inequality and segregation by skill. *NBER Working Paper Series 5718.*

Kremers, J. J., Ericsson, N. R., & Dolado, J. J. (1992). The power of cointegration tests. *Oxford Bulletin of Economics and Statistics,* 54(3), 325-348.

Krishna, P. L., Yamamoto, N. S., Yasuhiro, N. A., Kano, H., 山本, 直之/杉本, 安寛/西脇, 亜也/狩野, & 秀之. (2010). Estimation of Production Function and Resource use Condition of Organic Coffee Cultivation in different Farm Size and Altitude Categories in the Hill Region of Nepal. *European Journal of Scientific Research,* 45 (3), .438 - 449.

Kristensen, K. (1999). *A consistent estimate of Danish agriculture's production function.* SJFI working paper ; no. 1999/17.

Kunimitsu, Y. (2012). Causative factors for changes in total factor productivity of Japanese agriculture under the era of climatic uncertainty. In 2012 Annual Meeting, February 4-7, 2012, Birmingham, Alabama (No. 119727). Southern Agricultural Economics Association.

Kutty, R. M., & Nekooei, M. J. (2013), Analysis of Food Policy: A Study of Malaysia, ISOR Journal of Humanities and Social Science, 12(4), 58-63.

Kuznets, S. (1964). Economic Growth and Contribution of Agriculture. In C. K. W. Eicher, L.W. (Ed.), *Agriculture in Economic Development*. New York. McGraw Hill.

Kwiatkowski, D., Phillips, P. C., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root: How sure are we that economic time series have a unit root?. *Journal of econometrics,* 54(1), 159-178.

Kwon, O. S., & Lee, H. (2004). Productivity improvement in Korean rice farming: parametric and non-parametric analysis†. *Australian Journal of Agricultural and Resource Economics,* 48(2), 323-346.

Lai, F. S., Ahmad, J. S. & Zaki, A. M.. (1996). Sediment yields from selected catchments in Peninsular Malaysia. *IAHS Publications-Series of Proceedings and Reports-*

Intern Assoc Hydrological Sciences. 236, 223-232.

Lau, L. J., & Yotopoulos, P. A. (1989). The meta-production function approach to technological change in world agriculture. *Journal of Development Economics,* 31(2), 241-269.

Lebrun, I., & Perez Ruiz, E. (2011). *Real unit labor costs differentials in EMU: How big, how benign and how reversible?*.IMF Working Papers, 1-27.

Lee, D., & Schmidt, P. (1996). On the power of the KPSS test of stationarity against fractionally-integrated alternatives. *Journal of econometrics,* 73(1), 285-302.

Leibenstein, H. (1966). Allocative efficiency vs." X-efficiency". *The American Economic Review,* 56(3), 392-415.

Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *The manchester School,* 22(2), 139-191.

Lians, A. (1978). *Regional concentration in expansion of rice production in Indonesia. (Unpublished PhD thesis). University of the Philippines, Quezon City.*

Liverpool-Tasie, L. S. O.,Barrett, C. B., & Sheahan, M. B. (2014). Understanding fertilizer use and profitability for rice production across Nigeria's diverse agro ecological conditions. In Annual Bank Conference on Africa (pp. 1–36).

Lloyd, P. J. (1969). Elementary geometric/arithmetic series and early production theory. *The Journal of Political Economy,* 77(1), 21-34. http://doi.org/10.1086/259491.

Lu, Y. C., & Fletcher, L. B. (1968). A generalization of the CES production function. *The Review of Economics and Statistics,* 50(4), 449-452.

Lyroudi, K., & Angelidis, D. (2006). Measuring Banking Productivity of The Most Recent European Union Member Countries; A Non-Parametric Approach. *Journal of*

Economics and Business, 11(1), 37-57.

Maamor, S., & Sahlan, R. (2005). Penggunaan Sumber Tenaga, Guna Tenaga dan Pertumbuhan Ekonomi Di Malaysia: Analisis Sebab-Penyebab. *Jurnal Ekonomi Malaysia*, 39, 25-52.

Mahani, Z. A. (1993). Capital-labour substitution in selected Malaysian manufacturing industries. *Malaysian Journal of Economic Studies,* 30(2), 13-26.

Mailena, L., Shamsudin, M. N., Mohamed, Z., & Radam, A. (2013). Optimality of Input Used, Input Demand and Supply Response of Rice Production: Experience in MADA Malaysia. *Journal of Economics and Sustainable Development*, 4(18), 71-76.

Maisom, A. (1989). Comparison of alternative estimates of the elasticity of substitution in Malaysian manufacturing industries. *Malaysian journal of economic studies, 26(2)*, 31-42.

Malaysia. (2006). *Penyata Rasmi Parlimen Dewan Rakyat*. Kuala Lumpur.

Martin, W., & Warr, P. G. (1992). The declining economic importance of agriculture: a supply-side analysis for Thailand (No. 92/1). Working Paper in Trade and Development.

Mellor, J. W. (1984). Agricultural development and the Intersectoral Transfer of Resources. *Agricultural Development in the Third World*, 136-146.

Mérette, M. (2007). Substitution between Young and Old Workers in an Ageing Context. In *Prepared for the International Conference on Policy Modelling, University of Sao Paulo.* Brazil.

Mills, Edwin S., & Ernesto, M., Pernin. (1994). Introduction and Overview, "Urban Poverty in Asia: A Survey of Critical Issues, ed, by Ernesto M., Pernia. Hongkong: Oxford University Press, 3-51.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2007). Agricultural Statistical Handbook 2007. Kuala Lumpur: Ministry of Agriculture and Agro-Based Industry.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2008). Agricultural Statistical Handbook 2008. Kuala Lumpur: Ministry of Agriculture and Agro-Based Industry.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2011a). Dasar Agromakanan 2011-2020. Kuala Lumpur: Retrieved from http://www.moa.gov.my.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2011b). Retrieved from http://www .moa.gov.my/web/guest/parlimen-malaysia.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2012). Agricultural Statistical Handbook 2012. Kuala Lumpur: Ministry of Agriculture and Agro-Based Industry.

Ministry of Agriculture and Agro-Based Industry [MOA]. (2013a). Agricultural Statistical Handbook 2013. Kuala Lumpur: Ministry of Agriculture and Agro-Based Industry.

Ministry of Agriculture and Agro-Based Industry [MOA]. 2010. KADA Annual Report 2010. Ministry of Agriculture and Agro Base Industry of Malaysia, Putrajaya.

Ministry of Agrigulture and Agro-based Industry [MOA]. (2013b). Parlimen Malaysia. Retrieved from http://www.moa.gov.my/web/guest/parlimen-malaysia.

Ministry of Finance [MOF]. (1985). Economic Report 1985-1986. Kuala Lumpur: Ministry of Finance.

Ministry of Finance [MOF]. (1995). Economic Report 1995-1996. Kuala Lumpur: Ministry of Finance.

Ministry of Finance [MOF]. (1980). Economic Report 1980-1981. Kuala Lumpur: Ministry of Finance.

Ministry of Finance [MOF]. (1990). Economic Report 1990-1991. Kuala Lumpur: Ministry of Finance.

Ministry of Finance [MOF]. (2000). Economic Report 2000-2001. Kuala Lumpur: Ministry of Finance.

Ministry of Finance [MOF]. (2013). Highlight of 2013 Budget and 2013 Budget Touch Point. Kuala Lumpur: Retrieved from www.treasury.gov.my.

Mishra, S. (2007). A brief history of production functions. *Available at SSRN 1020577.*

Mohammed, Y. (1988). Malaysian natural rubber market model. *Pertanika, 11(3)*, 441-449.

Mohd Kasri Sadon. (2011) Sejarah Penenaman Padi di Keda. Retrieved from www.kdhlib.gov.my/wancana/SEJARAH PENANAMAN PADI DI KEDAH.pdf

Mohd Kasturi, N. (2011). Warisan Kesultanan Melayu: Surat-Menyurat Sultan Abdul Hamid dan Ekonomi Kedah. *SARI: Jurnal Alam dan Tamadun Melayu*, 29(2), 45-66.

Mohd Salim, T. (2010). Management and delivery system of paddy and rice subsidies. In Proceeding National Rice Conference 2010. Strengthening Food Security Through Sustainable Rice Production, 22.

Moses, J., & Adebayo, E. (2007). Efficiency of factors determining rainfed rice production in Ganye Local Government Area, Adamawa State. *Journal of Sustainable Development in Agriculture & Environment*. 3, 20-30.

Muda Agricultural Development Authority [MADA]. (2009). *Perangkaan MADA 2009.*

Kedah.

Muhammad Alias, R.M.A. (1982) Productivity in Agriculture. *Land Development Digest* 5(1), pp. 1 – 14.

Muhammad, S., & Qazi, M. A., 2003, Macroeconomic Reforms and Total Factor Productivity Growth in Pakistan: An Empirical Analysis, Paper presented at the 56th International Atlantic Economic Conference held at Quebec City, Canada during 16 – 19, October 2003. Retrieved from *www.spdc.org.pk/Publications /Conference%20Papers/CP-55.pdf.*

Mundlak, Y. (1988). Endogenous technology and the measurement of productivity. In Susan M.Capalbo and John M. Antle. (Eds.), Agricultural Productivity: Measuremeni and Explanation. Washington.

Mundlak, Y., Butzer, R., & Larson, D. F. (2012). Heterogeneous technology and panel data: The case of the agricultural production function. *Journal of Development Economics,* 99(1), 139-149.

Mundlak, Y., Larson, D., & Butzer, R. (2004). Agricultural dynamics in Thailand, Indonesia and the Philippines. *Australian Journal of Agricultural and Resource Economics,* 48(1), 95-126.

Mupondwa, Edmund K., (2005), Induced Technological Change in Canadian Agriculture Field Crops - Canola and Wheat: 1926-2003, No 19333, 2005 Annual meeting, July 24-27, Providence, RI, American Agricultural Economics Association (New Name 2008: Agricultural and Applied Economics Association), http://EconPapers.repec.org/RePEc:ags:aaea05:19333.

Murad, W., Nik Hashim, N. M., and Siwar, C. (2008). Review of Malaysian agricultural policies with regards to sustainability. *American Journal of Environmental Sciences*, 4(6), 608-614.

Mutert, E., & Fairhurst, T. (2002). Developments in rice production in Southeast Asia. *Better Crops International*. 15, 12-17.

Najim, M., Lee, T., Haque, M. A., & Esham, M. (2007). Sustainability of Rice Production: A Malaysian Perspective. *Journal of Agricultural Sciences,* 3(1), 1-12.

Nantawan, C. (2006). *Labour Efficiency of Rice Farming in Thailand With Emphasis on The Central Plain. (Unpublished PhD thesis). Universiti Sains Malaysia (USM)*

Narayan, P. K. (2004). *Reformulating critical values for the bounds F-statistics approach to cointegration: an application to the tourism demand model for Fiji*: .Discussion Paper No. 02/04, Australia: Department of Economics, Monash University.

Narayan, P. K., & Narayan, S. (2006). Savings behaviour in Fiji: an empirical assessment using the ARDL approach to cointegration. *International Journal of Social Economics,* 33(7), 468-480.

Narayanan, B. G. (2010). Long-run relationship between output, capital, labour and productivity in emerging market economies. Applied Economics, 42(6), 759-768.

National Economic Advisory Council [NEAC]. (2009). New Economic Model for Malaysia Part 1. Retrieved from *www.pmo.gov.my /dokumenattached /NEM_ Report_I.pdf*

Ng, S., & Perron, P. (2001). A note on the selection of time series models (No. 500). Boston College Department of Economics.

Nhamo, S., & Nhamo, G. (2006). Macroeconomics,(adult) education, and poverty eradication in Southern Africa. *International Review of Education, 52(3-4)*, 305-322.

Nicholson Walter (2005). Microeconometric Theory: Basic Principles and Extensions. Ninth edition. P 181-200

Nik Fuad M. K. (2005). *Agricultural policy and sustainable development in Malaysia,* UMT Publisher.

Nik Fuad, M. K. (2002). *An Economic Analysis Of The Malaysia Rice Sector: Prospects And Policy Alternatives. (Unpublished PhD thesis), Universiti Malaysia Terengganu.*

Nin Pratt, A., & Yu, B. (2008). An updated look at the recovery of agricultural productivity in sub-Saharan Africa. *International Food Policy Research Institute*. Discussion Paper, 787.

Nor Diana, I., Siwar,C., Talib, B. A., & Berma, M. (2012). Socioeconomic impact on farmers in Malaysia: A case study on integrated agricultural development project. *American Journal of Applied Sciences*, 9(4), 579-583.

Nordiana, I. & Mook, L. S. (2009). *Factors Affecting Paddy Production Under Integrated Agriculture Development Area of North Terengganu (IADA KETARA): A Case Study*.Retrieved from http://ipicex.com/docs/posters/Nordiana and Low.pdf

Noriah, M., Muhammad, S., M., Musa, M., Saidin, M., Halimi, A. J., Othman, M. I., & Abd Aziz, S. (2006). Sejarah Awal Pulau Pinang. Project Report. Universiti Sains Malaysia.

Norsida, M. & Sami, I. S. (2009). Off-farm employment participation among paddy farmers in the Muda Agricultural Development Authority and Kemasin Semerak granary areas of Malaysia. *Asia-Pacific Development Journal,* 16(2), 141-153.

Norsida, M. (2009). Factors affecting the decision making in off farm employment among paddy farmers in Kemasin Semerak. *Pertanika Journal of Social Sciences & Humanities,* 17(1), 7-15.

Nur Badriyah, K. Z., Jamal, A., Zakirah, O. & Kamal, A. H. (2013). Pengukuran Produktiviti Padi: Kajian Terhadap Inovasi SRI , Prosiding Persidangan Kebangsaan Ekonomi Malaysia ke VIII (PERKEM VIII), Jilid 3, Dasar Awam Dalam Era Transformasi Ekonomi: Cabaran dan Halatuju, 7 – 9 Jun 2013, Johor Bahru.

Oladeebo, J., & Fajuyigbe, A. (2007). Technical efficiency of men and women upland rice farmers in Osun State, Nigeria. *Journal of Human Ecology,* 22(2), 93-100.

Oniah, M., Kuye, O., & Idiong, I. (2008). Efficiency of resource use in small scale swamp rice production in Obubra local government Area of cross river state, Nigeria. *Middle-East Journal of Scientific Research,* 3(3), 145-148.

Opie, R. (1996). *The theory of Economic Development, translation from Schumpeter, J.A.* United States of America: Oxford University Press.

Ortega, C. B. & Lederman, D. (2004). Agricultural productivity and its determinants: revisiting international experiences. Estudios de economía, 31(2), 133-163.

Othman, J., & Jusoh, M. (2001). Factor shares, productivity, and sustainability of growth in the Malaysian agricultural sector. ASEAN Economic Bulletin, 320-333.

Othman, O. (2008). *Rice Production and Potential for Hybrid Rice in Malaysia.* In 2nd International Plantation Industry Conference & Exhibition (IPiCEX 2008). (pp. 1–10). UiTM Press.

Otsuka, K., & Reardon, T. (1998). *Lessons from Rural Industrialization in East Asia: Are They Applicable to Africa?* Paper presented at the an IFRI/World Bank-sponsored Workshop on Strategies for Stimulating Growth of the Rural Nonfarm Economy in Developing Countries. Warrenton-VA. USA.

Oulton, N., & O'Mahony, M. (1994). *Productivity and Growth: A Study of British Industry 1954-86. National Institute of Economic and Social Research Occasional* Papers: Vol.46. Cambridge University Press: Cambridge, UK.

Palmer, I. (1976). The new rice in Asia: conclusions from four country studies [Indonesia, Philippines, Malaysia, Thailand]. *Report-United Nations Research Institute for Social Development*. Geneva.

Patel, R., & Gabani, L. (1973). Economic analysis of hybrid bajra seed production and marketing in Gujarat. *Indian journal of Agricultural Economics,* 85-92.

Paterson, N. (2012). Elasticities of Substitution in Computable General Equilibrium Models. Retrieved from http:// publications.gc.ca/ collections/collection_2013 /fin/F21-8-2012-02-eng.pdf

Pennsylvania State University. (2005). An Inquiry into the Nature and Causes of the Wealth of Nations by Adam Smith. Retrieved from http://www2.hn.psu. edu /faculty/jmanis/adam-smith/wealth-nations.pdf

Pesaran, M. H., & Pesaran, B. (1997). *Working with Microfit 4.0: interactive econometric analysis*: Oxford University Press.

Pesaran, M. H., Shin, Y., & Smith, R. J. (1996). *Testing for the'Existence of a Long-run Relationship* (No. 9622), Faculty of Economics, University of Cambridge.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics, 16(3)*, 289-326.

Phillips, P. C. (1987). Time series regression with a unit root. *Econometrica,* 55(2), 277-301.

Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika,* 75(2), 335-346.

Rabu. M.R. & Shah. M. D. M. (2013). Food and livelihood security of the Malaysian paddy farmers. Review, Technology Management, 8, 59–69.

Rakotoarisoa, M. A. (2011). The impact of agricultural policy distortions on the productivity gap: Evidence from rice production. *Food Policy, 36(2), 147-157.*

Ramli, N. N., Shamsudin, M. N., & MOhamed. Z., & Radam, A. (2012). The Impact of Fertilizer Subsidy on Malaysia Paddy/Rice Industry Using a System Dynamics Approach. International Journal of Social Science and Humanity, 2(3), 213–219.

Rao, V.Y., & Heady, E.O. (1969). Substitution rates between technology, land and labour. *Indian Social Agricultural Statistics Journal,* 21(2), 20-42.

Ready, G. P. (2005). Impact of Water Management on Production of Rice in Balipatna Command Area of Orissa, India. *The Journal of Agricultural Science, 1*(2), 15-20.

Revilla-Molina, I. M., Bastiaans, L., Van Keulen, H., Mew, T., Zhu, Y., & Villano, R. A. (2008). Improvement of technical efficiency in rice farming through interplanting: A stochastic frontier analysis in Yunnan, China. In Revilla-Molina (Eds) *Genetic diversity for sustainable rice blast management in China: Adoption and impact,*

Retrieved from http://library.wur.nl/WebQuery/edepot/122082#page=71.

Rosegrant, M. W., & Pasandaran, E. (1995). Determinants of public investment: irrigation in Indonesia. *Jurnal Agro Ekonomi,* 14(2), -20.

Rosnani, H. (2015). Policies and Economic Development of Rice Production in Malaysia, Food and Fertilizer Technology Center fo the Asian and Pacific Region. 1–4.

Sabir, M., & Ahmed, Q. M. (2003). *Macroeconomic Reforms and Total Factor Productivity Growth in Pakistan,* Paper presented at the 56th International Atlantic Economic Conference held at Quebec City, Canada.

Sachchamarga, K., & Williams, G. W. (2004). *Economic Factors Affecting Rice Production in Thailand.* Texas Agribusiness Market Research Center International Research Report No. IM-03-04.

Samuelson, P. A. (1979). Paul Douglas's measurement of production functions and marginal productivities. *The Journal of Political Economy,* 87(5), 923-939.

Schreyer, P., & Pilat, D. (2001). Measuring productivity. *OECD Economic studies,* 33(2001/2), 127-170.

Schultz, T. W. (1978). *Distortions of agricultural incentives.* Bloomington, IN. Indiana University Press,

Shah, A. H. (2012). Economic analysis of the transportation system for the wheat seed industry in Punjab, Pakistan.

Shah, A.H. (1993). Economic Analysis of The Transportation System For The Wheat Seed Industry in Punjab, Pakistan. (PhD Dissertation), Texas Tech University. Retrieved from http://repositories.tdl.org/ttu-ir/handle/2346/16885?show=full.

Shahbaz, M., Tang, C. F., & Shahbaz, S. M. (2011). Electricity consumption and economic growth nexus in Portugal using cointegration and causality approaches. *Energy Policy, 39(6)*, 3529-3536. http://doi.org/10.1016/j.enpol.2011.03.052.

Shamsudin, M. N. (2014). Rice Farms Efficiency and Factors Affecting the Efficiency in MADA Malaysia. *Journal of Applied Sciences*, 14(18), 2177-2182.

Shephard, R. W. (2015). *Theory of cost and production functions.* Princeton University Press.

Sherlund, S. M., Barrett, C. B., & Adesina, A. A. (2002). Smallholder technical efficiency controlling for environmental production conditions. *Journal of Development Economics,* 69(1), 85-101.

Shweta, M. K., Mahajanashetti, S.B. & Kerun, N. M. (2011). Economics of paddy processing: A comparative analysis of conventional and modern rice mills. *Karnataka Journal of Agricultural Sciences,* 24(3). 331-335.

Siason, J. F., Prangkotanapan S. & Hayami, Y. (1978). *Structural Change in Rice Supply Relation: Philippines and Thailand.* In International Rice Research Institute. Economic Consequences of the New Rice Technology. Los Banos, Philippines.

Singh, R., Kumar, P., & Woodhead, T. (2002). Smallholder farmers in India: Food security and agricultural policy. *RAP publication, 3*. Retrieved from ftp://ftp.fao.org/docrep/fao/005/ac484e/ac484e00.pdf.

Siwar, C., & Surtahman, K. H. (2003). *Ekonomi Malaysia,* (edisi 5). Kuala Lumpur: Longman.

Siwar, C., Nor Diana, M. I., Yasar, M., & Morshed, G. (2014). Issues and Challenges Facing Rice Production and Food Security in the Granary Areas in the East Coast

Economic Region (ECER), Malaysia, *Research Journal of Applied Sciences, Engineering and Technology,* 7(4), 711-722.

Siwar, C., Nor Diana, M.I., Yasar, M., & Morshed, G. (2014). Issues and Challenges Facing Rice Production and Food Security in the Granary Areas in the East Coast Economic Region (ECER), Malaysia. *Research Journal of Applied Sciences, Engineering and Technology,* 7(4): 711-722.

Snodgrass, D. R. (1980). *Inequality and economic development in Malaysia*: Oxford University Press. Kuala Lumpur.

Solow, R. M. (1957). Technical change and the aggregate production function. *The Review of Economics and Statistics,* 39(3), 312-320.

Stefan, T. (2002). *Understanding the concept of productivity.* Paper presented at the 7th Asia-Pacific Industrial Engineering and Management Systems Conference, Taipei.

Stern, D. I. (2011). Elasticities of substitution and complementarity. *Journal of productivity analysis,* 36(1), 79-89.

Stock, J. H. & Mark, W.W. (2001). Vector Autoregressions. *Journal of Economic Perspective,* 15(4),101 - 115.

Stock, J. H. (1994). Unit roots, structural breaks and trends. *Handbook of econometrics,* 4, 2739-2841.

Suleiman, H. U., Abdullah, A. M., Shamsudin, M. N., & Mohamed, Z. A. (2014). Effects of Paddy Price Support Withdrawal on Malaysian Rice Sector : Time Series Econometric Approach. Asian Journal of Agriculture and Rural Development, 4(7), 401–413.

Suresh, A., & Reddy, T. (2006). Resource-use efficiency of paddy cultivation in Peechi command area of Thrissur district of Kerala: An economic analysis. *Agricultural Economics Research Review,* 19(1), 159-117.

Tan, S. H. (1987). *Malaysia's rice policy: A critical analysis*: Institute of Strategic and International Studies, Malaysia.

Tang, T. C. (2005). Revisiting South Korea's Import Demand Behavior: A Cointegration Analysis. *Asian Economic Journal,* 19(1), 29-50.

Taufik, M. (2007, 6 Mac 2007). Transformasi Menjana Produktiviti in Agro Biz Pertanian Adalah Perniagaan, *Utusan Malaysia.*

Tengku, M. A., & Ariffin, T. (1999). Effects of trade liberalization on agriculture in Malaysia: commodity aspects (No. 32694).

Terano, R., & Zainalabidin, M. (2012). *Expenditure Analysis of The Farm Household Economy in Malay Paddy Growing Villages.* Paper presented at the 3rd International Conference on Business and Economic Research (3rd ICBER 2012) Bandung, Indonesia.

Terano, R., & Fujimoto, A. (2010). Income inequality in two villages in Malaysia. *Journal of Agriculture Science, Tokyo University of Agriculture*, 55(1), 1-9.

Terano, R., Mohamed, Z., Shamsudin, M. N., & Abd. Latif, I. (2013b). Paddy Farm Management Practices: The Case of Sungai Petani Area in Malaysia. *Journal of International Food & Agribusiness Marketing*, 25(1), 116-127.

Terano, R., Zainalabidin, M., & Golnaz, R. (2013a). Farm Management Analysis in Paddy Granary Areas in Enhancing On-Farm Income. *AGRIS on-line Papers in Economics and Informatics,* 5(1),73-81.

Thai-Ha Le, & Youngho, C. (2011). Dynamic Relationships between the Price of Oil, Gold and Financial Variables in Japan: A Bounds Testing Approach. *MPRA Paper, University Library of Munic*h, Germany, Retrieved from http://mpra.ub.uni-muenchen.de/33030/ MPRA Paper No. 33030.

Thillainathan, R. (1969). Production functions in the West Malaysian manufacturing sector *Kajian Ekonomi Malaysia,* 6(2), 27-35.

Thirtle, C., Piesse, J., & Gouse, M. (2005). Agricultural technology, productivity and employment: Policies for poverty reduction. *Agrekon,* 44(1), 37-59.

Tijani, A. (2006). Analysis of the technical efficiency of rice farms in Ijesha Land of Osun State, Nigeria. *Agrekon,* 45(2), 126-135.

Timmer, C. P., Walter P. F., & Scott R. P. (1983). *Food Policy Analysis*, Baltimore, Md., The Johns Hopkins University Press.

Timmer, C. Peter (2010). *The Changing Role of Rice in Asia's Food Security.* Asian Development Bank, Sustainable Development Working Paper Series. Manila, Philippines.

Tiongco, M., & Dawe, D. (2002). Long-term evolution of productivity in a sample of Philippine rice farms: implications for sustainability and future research. *World Development*, 30(5), 891-898.

Tipper, A. (2011). *One For All.* Paper presented at the The Capital-Labour Substitution Elasticity In New Zealand. Paper prepared for the 52nd New Zealand Association of Economists conference, Wellington, New Zealand.

Tobias, A., Molina, I., Valera, H. G., Mottaleb, K. A., & Mohanty, S. (2012). *Handbook on rice policy for Asia*. International Rice Research Institute.

Toda, H. Y., & Phillips, P. C. (1993). Vector autoregressions and causality. *Econometrica: journal of the Econometric Society,* 61(6), 1367-1393.

Tomich, T. P., Kilby, P., & Johnston, B. F. (1995). *Transforming agrarian economies. Opportunities Seized, Opportunities Missed.* Cornell University Press.

Toriman, M. E., & Mokhtar, M. (2012). Irrigation: Types, Sources and Problems in Malaysia, In Teang Shui Lee (Ed.) I*rrigation Systems and Practices in Challenging Environments*, Retrieved from http://www. intechopen.com/ books/irrigation-systems-and-practices-in-challengingenvironments/irrigation-types-sources-and-problems-in-malaysia.

Toriman, M.E, Er, A.C., Lee, Q. Y. Lee, Sharifah Mastura S. A., Jali, F. M., Mokhtar, M., Elfithri, R., Gasim, M. G.,Yusop, Z., Aziz, N. A., Ahmah, H. & Jusoh, H. (2013). Paddy production and climate change variation in Selangor, Malaysia. Asian Social Science, 9(14 SPL), 55–62.

Trueblood, M. A. (1996). *Econometric Estimates of Inter-country Agricultural Productivity*. Department of Agricultural Economics, University of Minnesota.

Tun, Y., & Kang, H. (2015). An Analysis on the Factors Affecting Rice Production. Journal of East Asian Economic Integration, 19(2), 167–188.

ul Haq, M. (1971). Employment and Income Distribution in the 1970's: A New Perspective. *Pakistan Economic and Social Review,* 9(1/2), 1-9.

United Nations Development Programme [UNDP]. (2005). *Malaysia Mencapai Matlamat Pembangunan Milenium*. Kuala Lumpur. Retrieved from www.my.undp.org/content/dam/malaysia/docs/MDG_advocacy_Malay.pdf.

United States Department of Agriculture [USDA]. (2012). Global Agricultural Information Network Report. Retrieved from http://static.globaltrade.net /files/pdf /2011040611 5103794.pdf

United States Department of Agriculture [USDA]. (2013). Global Agricultural Information Network Report. Retrieved from http://gain.fa.usda.gov/Recent GAIN Publications/Grain & Feed Annual Kuala Lumpur_Malaysia_2-25-2013.pdf.

Vengedasalam, D., Harris, M., & MacAulay, T. G. (2011). *Malaysian Rice Trade And Government Interventions.* Paper presented at the 2011 Conference (55th), February 8-11, 2011, Melbourne, Australia.

Vengedasalam, D., Karunagaran. M., & Rohana, K. (2008). *Microeconimics*. Selangor: Oxford University Press.

Verma, R. (2007). Savings, Investment and Growth in India An Application of the ARDL Bounds Testing Approach. *South Asia Economic Journal,* 8(1), 87-98.

Verma, S., & Sidhu, M. (2009). Sources, Replacement and Management of Paddy Seed by Farmers in Punjab. *Agricultural Economics Research Review,* 22(2), 323-328.

Virmani, V. (2004). Unit root tests: results from some recent tests applied to select Indian macroeconomic variables, I*ndian Institute of Management Ahmedabad, Research and Publication Department: IIMA Working Papers,* WP2004-02-04.

Wan Jusoh, W. M. (2006). Developing Malaysian seed industry: Prospects and challenges, *Economic and Technology Management Review.* 1(1), 51–59.

Wan, G. H., Griffiths, W. E., & Anderson, J. R. (1992). Using panel data to estimate risk effects in seemingly unrelated production functions. *Empirical Economics,* 17(1), 35-49.

Warr, S., Rodriguez, G., & Penm, J. (2008). Changing food consumption and imports in Malaysia Research Report, 8. Retrieved from http://www.abare.gov.au.

Wasmer, E. (2001). Between-group competition in the labor market and the rising returns to skill: US and France 1964-2000. CEPR discussion paper 2798.

Wharton, C. R. (1963). *Economic Meaning of Subsistence. Malayan Economic Review. 8,* 22-44.

Widawsky, D., Rozelle, S., Jin, S., & Huang, J. (1998). Pesticide productivity, host-plant resistance and productivity in China. *Agricultural Economics,* 19(1), 203-217.

Wiebe, K. D., Schimmelpfennig, D. E., & Soule, M. J. (2001). *Agricultural policy, investment and productivity in sub-Saharan Africa: a comparison of commercial and smallholder sectors in Zimbabwe and South Africa.* Retrieved from *http://www.fao.org/docrep/003/x9447e/x9447e09.htm*

Wiebe, K., Soule, M. J., Narrod, C., & Breneman, V. E. (2000). Resource quality and agricultural productivity: A multi-country comparison. *Presented at the Annual Meeting of the American Agricultural Economics Association, Tampa, Florida.*

Wodon, Q. (1999). *Growth, poverty, and inequality: a regional panel for Bangladesh* (Vol. 2072): World Bank Publications.

Wong, L.C. (2007). *Development of Malaysia's Agricultural Sector: Agriculture as an Engine of Growth?* Paper presented at the Presented at the ISEAS 'Conference on the Malaysian Economy: Development and Challenges.

Wong, L.C. (2009). *New Dimensions of Food Security: Implications on Self Sufficiency and others concerns*. Paper presented at the Transforming the Nation: Constructing the Future, Investing in Prosperity, Kuala Lumpur.

World Bank. (1988). *Malaysia - Review of the rice industry*. Washington, DC: World Bank. Retrieved from http://documents.worldbank.org/curated/en/1988/11/739351/malaysia-review-rice-industry

World Bank. (2011). Data. Retrieved from http://data.worldbank.org/

Xiaosaong, X., & Jeffery, S. R. (1998). Efficiency and technical progress in traditional and modern agriculture: evidence from rice production in China. *Agricultural Economics,* 18(2), 157-165.

Yeong-Sheng, TEY (John), Darham, Suryani, Mohd Noh, Aswani Farhana and Idris, Nurjihan, (2009), Acreage response of rice: A case study in Malaysia, *MPRA Paper, University Library of Munich*, Germany, Retrieved from http://EconPapers.repec.org/RePEc:pra:mprapa:15300.

Yohanna, J. K., Fulani, A. U., & Aka'ama, W. (2011). A survey of mechanization problems of the small scale (peasant) farmers in the middle belt of Nigeria. Journal of Agricultural Science, 3(2), 262-266.

Yokoyama, Y. (1991). Structural Change in the 1980s. *Malaysian Economy in Transition, Institute of Developing Economies,* Tokyo.

Zarinah, M. 2011. Demographic Transition in Malaysia: The Changing Roles of Women, Demographic Transition in Malaysia: The Changing Roles of Women, 15th Conference of Commonwealth Statisticians, New Delhi, India, 7-10 February 2011. Retrieved from *www.cwsc2011.gov.i n/papers/ demographic _transitions/Paper_1.pdf.*

Zhi, M., Hua, G. B., Wang, S. Q., & Ofori, G. (2003). Total factor productivity growth accounting in the construction industry of Singapore. *Construction Management and Economics,* 21(7), 707-718.